

What is claimed is:

1. A method executable by a computer of automatically generating access to at least one Business Application executed on a data processing system, wherein said Business Application is panel-driven and offers its services interacting with a user controlled by at least one Business Application panel and wherein said Business Application processes succeeding Business Application panels dependent on user interactions or user specified data or the contents of any kind of data base the Business Application is operating on, said computerized method comprising:

an analysis step of analyzing a description of said Business Application panels determining their input data and a generation step generating according to said analysis step at least one procedure, called Transaction Method, said Transaction Method being callable from a program and said Transaction Method being generated to autonomously executing at least a part of said Business Application without interacting with said user;

wherein said generation step generates program code into said procedure, which, when executed, is providing required input data according to said analysis step to at least one sequence of succeeding Business Application panels, said sequence comprising at least one Business Application panel, and wherein said generation step generates program code into said procedure, which, when executed, is performing a required activity for launching said Business Application to autonomously process said at least one sequence of succeeding Business Application panels without interaction with said user.

2. The method according to Claim 1 further comprising generating said description of said Business Application panels prior to said analysis step wherein said Business Application

4 panel description being independent from the system environment
5 in which said Business Application is implemented and wherein
6 the method encompasses:

7 a Business Application panel modelling step, in which at
8 least one of said Business Application panels, processed by said
9 Business Application as input or output panels, called Business
10 Application messages, is modelled with respect to individual
11 Business Application panel elements;

12 a Business Application message description generation step,
13 in which at least one of said Business Application panels,
14 processed by said Business Application as input or output
15 panels, called Business Application messages, is parsed with
16 respect to individual Business Application panel elements; and

17 in which for each modelled Business Application message
18 Transaction Record is generated storing said Business
19 Application message description;

20 a User Interaction Graph generation step, in which the
21 sequence of Business Application messages as processed by said
22 Business Application is stored in at least one directed User
23 Interaction Graph.

1 3. The method according to Claim 2 further comprising:

2 a Business Application message transition generation step
3 in which a Business Application message transition action is
4 generated to launch the Business Application to process a next
5 Business Application panel after a current Business Application
6 panel according to the sequence within the User Interaction
7 Graph; and

8 in which said Business Application message transition
9 action is stored within the generated Transaction Record during
10 said Business Application message description generation step.

1 4. The method according to Claim 2 wherein said Business
2 Application message description generation step stores

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

a preemptive Transaction Record indication, indicating a Business Application message being part of said execution unit of succeeding Business Application messages and not being a first Business Application message in said execution unit.

7. The method according to Claim 6 in which at least one Transaction Method is generated and provided to execute an execution unit of succeeding Business Application messages, said Transaction Method is starting said execution of Business Application messages with an interactive Transaction Record;
- said Transaction Method is proceeding said execution of Business Application messages with all preemptive Transaction Records succeeding said interactive Transaction Record within the User Interaction Graph;
- said Transaction Method is ending said execution of Business Application messages with a next interactive Transaction Record or with a last preemptive Transaction Record, if no Transaction Record is succeeding said last preemptive Transaction Record within the User Interaction Graph.
8. The method according to Claims 7 wherein said generated Transaction Method
- encompasses as Transaction Method input parameters all input elements of all Business Application messages modelled by Transaction Records belonging to said execution unit and
- encompasses as Transaction Method output parameters, all output elements of all Business Application messages modelled by Transaction Records belonging to said execution unit.
9. The method according to Claim 1 extending the generated Transaction Method by communication relevant capabilities provided for
- allowing the Transaction Method to be executed in a local data processing system and
- allowing the Transaction Method to communicate with a remote data processing system via a computer network using anyone of the available communication protocols and

9 allowing the Transaction Method to control execution of
10 said underlying Business Application on said remote data
11 processing system.

1 10. The method according to claim 1 in which the Transaction
2 Method is generated as a method of a Transaction Object (TO)
3 class in the sense of object-oriented technology for
4 encapsulating and controlling said Business Application and said
5 Transaction Method method is being called TO Method (TOM).

1 11. The method according claim 1 in which said Transaction
2 Record is generated as Transaction Record class in the sense of
3 object-oriented technology.

1 12. In a computer automatically generating access to at least
2 one Business Application executed on a data processing system,
3 wherein said Business Application is panel-driven and offers its
4 services interacting with a user controlled by at least one
5 Business Application panel and wherein said Business Application
6 processes succeeding Business Application panels dependent on
7 user interactions or user specified data or the contents of any
8 kind of data base the Business Application is operating on, an
9 apparatus comprising:

10 means for analyzing a description of said Business
11 Application panels determining their input data and

12 means for generating at least one Transaction Method
13 according to said analysis, said Transaction Method being
14 callable from a program and said Transaction Method being
15 generated to autonomously execute at least a part of said
16 Business Application without interacting with said user;

17 wherein said means for generating includes program code in
18 said procedure, which, when executed, is providing required
19 input data according to analysis by said means for analysis to

Sub
a1
20 at least one sequence of succeeding Business Application panels,
21 said sequence comprising at least one Business Application
22 panel, and

23 wherein said means for generating includes program code in
24 said procedure, which, when executed, is performing a required
25 activity for launching said Business Application to autonomously
26 process said at least one sequence of succeeding Business
27 Application panels without interaction with said user.

1 13. The apparatus according to Claim 12 wherein said means for
2 generating generates a Business Application panel description of
3 said Business Application panels prior to analysis by said means
4 for analysing wherein said Business Application panel
5 description being independent from the system environment in
6 which said Business Application is implemented and wherein the
7 apparatus includes:

8 a Business Application panel modelling means in which at
9 least one of said Business Application panels, processed by said
10 Business Application as input or output panels, is modelled into
11 Business Application messages with respect to individual
12 Business Application panel elements;

13 a Business Application message description generation means
14 in which at least one of said Business Application panels,
15 processed by said Business Application as input or output
16 panels, is parsed into Business Application messages with
17 respect to individual Business Application panel elements; and

18 in which for each modelled Business Application message, a
19 Transaction Record is generated storing a Business Application
20 message description; and

21 a User Interaction Graph generation means, in which a
22 sequence of processed Business Application messages is stored in
23 at least one directed User Interaction Graph.

14. The apparatus according to Claim 13 wherein said apparatus further encompasses:

a Business Application message transition generation means, in which a Business Application message transition action is generated to launch the Business Application to process a next Business Application panel after a current Business Application panel according to the sequence within the User Interaction Graph; and

in which said Business Application message transition action is stored within the generated Transaction Record by said Business Application message description generation means.

15. The apparatus according to Claim 13 wherein said Business Application message description generation means stores descriptive information on the individual panel elements assembling said Business Application message with respect to type or length or position or indications which of the panel elements represent input and/or output elements within said Transaction Record.

16. The apparatus according to Claim 13 wherein said Business Application panel description is generated by parsing and analyzing Business Application message implementations of the system environment, said Business Application being implemented by interactions with a user of the data processing system gathering required Business Application panel description information.

17. The apparatus according to Claim 13 wherein said Business Application message description generation means incorporates indications on specific characteristics into the generated Transaction Record encompassing:

5 *Sub*
6 *at* an Entry Transaction Record indication, characterizing a
7 Business Application messages required for an initial start of a
8 Business Application execution;

9 an External Transaction Record indication, characterizing a
10 Business Application message being part of a second User
11 Interaction Graph and thus describing a Business Application
12 message sequence with a branch from a first User Interaction
13 Graph to said second User Interaction Graph;

14 an interactive Transaction Record indication, indicating a
15 Business Application message representing a first Business
16 Application message of an execution unit of succeeding Business
17 Application messages within said User Interaction Graph
18 encompassing at least said interactive Transaction Record; and

19 a preemptive Transaction Record indication, indicating a
20 Business Application message being part of said execution unit
21 of succeeding Business Application messages and not being a
first Business Application message in said execution unit.

1 18. The apparatus according to Claim 17 in which at least one
2 Transaction Method is generated and provided to execute an
3 execution unit of succeeding Business Application messages,
4 said Transaction Method is starting said execution of
5 Business Application messages with an interactive Transaction
6 Record;

7 said Transaction Method is proceeding said execution of
8 Business Application messages with all preemptive Transaction
9 Records succeeding said interactive Transaction Record within
10 the User Interaction Graph;

11 said Transaction Method is ending said execution of
12 Business Application messages with a next interactive
13 Transaction Record or with a last preemptive Transaction Record
14 if no Transaction Record is succeeding said last preemptive
15 Transaction Record within the User Interaction Graph.

19. The apparatus according to Claims 18 wherein said generated Transaction Method:

encompasses as Transaction Method input parameters, all input elements of all Business Application messages modelled by Transaction Records belonging to said execution unit; and encompasses as Transaction Method output parameters, all output elements of all Business Application messages modelled by Transaction Records belonging to said execution unit.

20. The apparatus according to Claim 12 extending the generated Transaction Method by communication relevant capabilities provided for

allowing the Transaction Method to be executed in a local data processing system and

allowing the Transaction Method to communicate with a remote data processing system via a computer network using anyone of the available communication protocols and

allowing the Transaction Method to control execution of said underlying Business Application on said remote data processing system.

21. The apparatus according to claim 12 in which the Transaction Method is generated as a Transaction Object class of object-oriented technology for encapsulating and controlling said Business Application.

22. The apparatus according claim 12 in which said Transaction Record is generated as a Transaction Record class of object-oriented technology.

23. A program storage device readable by a machine tangibly embodying at least one program of instructions executable by the machine to perform a method of automatically generating access

do at least one Business Application executed on a data processing system, wherein said Business Application is panel-driven and offers its services interacting with a user controlled by at least one Business Application panel and wherein said Business Application processes succeeding Business Application panels dependent on user interactions or user specified data or the contents of any kind of data base the Business Application is operating on, said method comprising:

an analysis step of analyzing a description of said Business Application panels determining their input data and a generation step generating according to said analysis step at least one procedure, called Transaction Method, said Transaction Method being callable from a program and said Transaction Method being generated to autonomously executing at least a part of said Business Application without interacting with said user;

wherein said generation step generates program code into said procedure, which, when executed, is providing required input data according to said analysis step to at least one sequence of succeeding Business Application panels, said sequence comprising at least one Business Application panel, and wherein said generation step generates program code into said procedure, which, when executed, is performing a required activity for launching said Business Application to autonomously process said at least one sequence of succeeding Business Application panels without interaction with said user.

24. The program storage device according to Claim 23 further comprising generating said description of said Business Application panels prior to said analysis step wherein said Business Application panel description being independent from the system environment in which said Business Application is implemented and wherein the method encompasses:

7 *Sub*
8 *ai* a Business Application panel modelling step, in which at
9 least one of said Business Application panels, processed by said
10 Business Application as input or output panels, called Business
11 Application messages, is modelled with respect to individual
12 Business Application panel elements;

13 a Business Application message description generation step,
14 in which at least one of said Business Application panels,
15 processed by said Business Application as input or output
16 panels, called Business Application messages, is parsed with
17 respect to individual Business Application panel elements; and

18 in which for said modelled Business Application message a
19 Transaction Record is generated storing said Business
20 Application message description;

21 a User Interaction Graph generation step, in which the
22 sequence of Business Application messages as processed by said
23 Business Application is stored in at least one directed User
24 Interaction Graph.

25. The program storage device according to Claim 24 further
comprising:

26 a Business Application message transition generation step
27 in which a Business Application message transition action is
28 generated to launch the Business Application to process a next
29 Business Application panel after a current Business Application
30 panel according to the sequence within the User Interaction
31 Graph; and

32 in which said Business Application message transition
33 action is stored within the generated Transaction Record during
34 said Business Application message description generation step.

35 26. The program storage device according to Claim 24 wherein
36 said Business Application message description generation step
37 stores descriptive information on the individual panel elements
38 assembling said Business Application message with respect to

5 type or length or position or indications which of the panel
6 elements represent input and/or output elements within said
7 Transaction Record.

1 27. The program storage device according to Claim 24 wherein
2 said Business Application panel description is generated by
3 parsing and analyzing Business Application message
4 implementations of the system environment said Business
5 Application is implemented by interactions with a user of the
6 data processing system gathering required Business Application
7 panel description information.

1 28. The program storage device according to Claim 24 wherein
2 said Business Application message description generation step
3 incorporates indications on specific characteristics into the
4 generated Transaction Record encompassing \

5 an Entry Transaction Record indication, characterizing a
6 Business Application messages required for an initial start of a
7 Business Application execution;

8 an External Transaction Record indication, characterizing a
9 Business Application message being part of a second User
10 Interaction Graph and thus describing a Business Application
11 message sequence with a branch from a first User Interaction
12 Graph to said second User Interaction Graph;

13 an interactive Transaction Record indication, indicating a
14 Business Application message representing a first Business
15 Application message of an execution unit of succeeding Business
16 Application messages within said User Interaction Graph
17 encompassing at least said interactive Transaction Record; and

18 a preemptive Transaction Record indication, indicating a
19 Business Application message being part of said execution unit
20 of succeeding Business Application messages and not being a
21 first Business Application message in said execution unit.

29. The program storage device according to Claim 28 in which
at least one Transaction Method is generated and provided to
execute an execution unit of succeeding Business Application
messages,

said Transaction Method is starting said execution of
Business Application messages with an interactive Transaction
Record;

said Transaction Method is proceeding said execution of
Business Application messages with all preemptive Transaction
Records succeeding said interactive Transaction Record within
the User Interaction Graph;

said Transaction Method is ending said execution of
Business Application messages with a next interactive
Transaction Record or with a last preemptive Transaction Record,
if no Transaction Record is succeeding said last preemptive
Transaction Record within the User Interaction Graph.

30. The program storage device according to Claims 29 wherein
said generated Transaction Method

encompasses as Transaction Method input parameters all
input elements of all Business Application messages modelled by
Transaction Records belonging to said execution unit and

encompasses as Transaction Method output parameters, all
output elements of all Business Application messages modelled by
Transaction Records belonging to said execution unit.

31. The program storage device according to Claim 23 extending
the generated Transaction Method by communication relevant
capabilities provided for

allowing the Transaction Method to be executed in a local
data processing system and

allowing the Transaction Method to communicate with a
remote data processing system via a computer network using
anyone of the available communication protocols and

9 *sub* allowing the Transaction Method to control execution of
10 said underlying Business Application on said remote data
11 processing system.

1 32. The program storage device according to claim 23 in which
2 the Transaction Method is generated as a method of a Transaction
3 Object class of object-oriented technology for encapsulating and
4 controlling said Business Application.

1 33. The program storage device according claim 23 in which said
2 Transaction Record is generated as Transaction Record class of
3 object-oriented technology.

0042042960
1 34. A computerized method of executing on a data processing
2 system at least one Business Application, wherein said Business
3 Application is panel-driven and offers its services interacting
4 with a user controlled by at least one Business Application
5 panel and wherein said Business Application processes succeeding
6 Business Application panels dependent on user interactions or
7 user specified data or the contents of any kind of data base the
8 Business Application is operating on, said computerized method
9 comprising:

10 a Transaction Method called from a program, said
11 Transaction Method is autonomously executing at least a part of
12 said Business Application without interacting with said user,

13 wherein said Transaction Method is autonomously providing
14 required input data to at least one sequence of succeeding
15 Business Application panels, and

16 wherein said Transaction Method is performing the required
17 activity for launching said Business Application to process,
18 after a current Business Application panel, a next Business
19 Application panel in said Business Application panel sequence
20 without interaction with said user.

1 35. The method according Claim 34 wherein said Transaction
2 Method includes handling Business Application messages with
3 respect to individual Business Application panel elements based
4 upon Transaction Records having Business Business Application
5 message descriptions and
6 wherein said Transaction Method launches the Business
7 Application to process, succeeding a current Business
8 Application panel, a next Business Application panel according
9 to a Business Application message transition action.

1 36. The method according Claim 34 wherein said Transaction
2 Method executes an execution unit of succeeding Business
3 Application messages;

4 starting said execution of Business Application messages
5 with an interactive Transaction Record indicating a Business
6 Application message representing a first Business Application
7 message of said execution unit of succeeding Business
8 Application messages;

9 proceeding said execution of Business Application messages
10 with all preemptive Transaction Records, specifying Business
11 Application messages being part of said execution unit of
12 succeeding Business Application messages and not being a first
13 Business Application message in said execution unit; and

14 ending said execution of Business Application messages with
15 a next interactive Transaction Record or with a last preemptive
16 Transaction Record, if no Transaction Record is succeeding said
17 last preemptive Transaction Record within said execution unit of
18 succeeding Business Application messages.

1 37. The method according to Claim 34 wherein said Transaction
2 Method is being executed in a local data processing system and
3 wherein said Transaction Method communicates with a remote
4 data processing system via a computer network and

5 *Sub* wherein said Transaction Method controls execution of said
 6 underlying Business Application on said remote data processing
 7 system.

1 38. An apparatus for executing on a data processing system at
 2 least one Business Application, wherein said Business
 3 Application is panel-driven and offers its services interacting
 4 with a user controlled by at least one Business Application
 5 panel and wherein said Business Application processes succeeding
 6 Business Application panels dependent on user interactions or
 7 user specified data or the contents of any kind of data base the
 8 Business Application is operating on, said apparatus comprising:

9 a Transaction Method means called from a program for
 10 autonomously executing at least a part of said Business
 11 Application without interacting with said user,

12 wherein said Transaction Method means includes means for
 13 autonomously providing required input data to at least one
 14 sequence of succeeding Business Application panels, and

15 wherein said Transaction Method means includes means for
 16 performing the required activity for launching said Business
 17 Application to process, after a current Business Application
 18 panel, a next Business Application panel in said Business
 19 Application panel sequence without interaction with said user.

1 39. The apparatus according Claim 38 wherein said Transaction
 2 Method means includes means for handling Business Application
 3 messages with respect to individual Business Application panel
 4 elements based upon Transaction Records having Business Business
 5 Application message descriptions, and

6 wherein said Transaction Method means launches the Business
 7 Application to process, succeeding a current Business
 8 Application panel, a next Business Application panel according
 9 to a Business Application message transition action.

40. The apparatus according Claim 38 wherein said Transaction Method means executes an execution unit of succeeding Business Application messages, said execution unit comprising:

means for starting said execution of Business Application messages with an interactive Transaction Record indicating a Business Application message representing a first Business Application message of said execution unit of succeeding Business Application messages;

means for proceeding said execution of Business Application messages with all preemptive Transaction Records, specifying Business Application messages being part of said execution unit of succeeding Business Application messages and not being a first Business Application message in said execution unit; and

means for ending said execution of Business Application messages with a next interactive Transaction Record or with a last preemptive Transaction Record, if no Transaction Record is succeeding said last preemptive Transaction Record within said execution unit of succeeding Business Application messages.

41. The apparatus according to Claim 38 wherein said Transaction Method means is being executed in a local data processing system and

wherein said Transaction Method means communicates with a remote data processing system via a computer network and

wherein said Transaction Method means controls execution of said underlying Business Application on said remote data processing system.

42. A program storage device readable by a machine tangibly embodying at least one program of instructions executable by the machine to perform method of executing on a data processing system at least one Business Application, wherein said Business Application is panel-driven and offers its services interacting with a user controlled by at least one Business Application

panel and wherein said Business Application processes succeeding

Business Application panels dependent on user interactions or user specified data or the contents of any kind of data base the Business Application is operating on, said computerized method comprising:

a Transaction Method called from a program, said Transaction Method is autonomously executing at least a part of said Business Application without interacting with said user, wherein said Transaction Method is autonomously providing required input data to at least one sequence of succeeding Business Application panels, and

wherein said Transaction Method is performing the required activity for launching said Business Application to process, after a current Business Application panel, a next Business Application panel in said Business Application panel sequence without interaction with said user.

43. The program storage device according Claim 42 wherein said Transaction Method includes handling Business Application messages with respect to individual Business Application panel elements based upon Transaction Records having Business Business Application message descriptions and

wherein said Transaction Method launches the Business Application to process, succeeding a current Business Application panel, a next Business Application panel according to a Business Application message transition action.

44. The program storage device according Claim 43 wherein said Transaction Method executes an execution unit of succeeding Business Application messages;

starting said execution of Business Application messages with an interactive Transaction Record indicating a Business Application message representing a first Business Application

message of said execution unit of succeeding Business

Application messages;

proceeding said execution of Business Application messages with all preemptive Transaction Records, specifying Business Application messages being part of said execution unit of succeeding Business Application messages and not being a first Business Application message in said execution unit; and ending said execution of Business Application messages with a next interactive Transaction Record or with a last preemptive Transaction Record, if no Transaction Record is succeeding said last preemptive Transaction Record within said execution unit of succeeding Business Application messages.

45. The program storage device according to Claim 43 wherein said Transaction Method is being executed in a local data processing system and

wherein said Transaction Method communicates with a remote data processing system via a computer network and

wherein said Transaction Method controls execution of said underlying Business Application on said remote data processing system.